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METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV 75, SR-06 (14 January 1969)

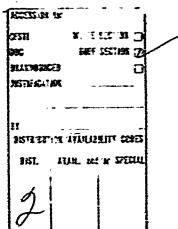
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ATMOSPHERIC SCIENCES OFFICE WHITE SANDS MISSILE RANGE, NEW MEXICO



UNITED STATES ARMY ELECTRONICS COMMAND



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METEOROLOGICAL DATA REPORT

NIKE-HYDAC STV 75, SR-06 (14 January 1969)

By

Harold H. Richart

DR-393

February 1969

DA Task 1T665702D127-02

ATMOSPHERIC SCIENCES OFFICE WHITE SANDS MISSILE RANGE, NEW MEXICO

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ABSTRACT

Meteorological data gathered for the launching of Nike-Hydac STV 75, SR-06, are presented for the Space and Missile Systems Organization, AFMDC, Hollowan Air Force Base, New Mexico, and for ballistic studies. The data appear, along with calculated ballistic data, in tabular form.

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Nike-Hydac STV 75, SR-06, was launched from Launch Complex 33, L-314, White Sands Missile Range (WSMR), New Mexico, at 0630 hours MST, 14 January 1969.

Meteorological data used in conjunction with theoretical calculations ... predict rocket impact were collected by the Meteorological Support Technical Area, Atmospheric Sciences Office (ASO), WSMR, New Mexico. The Ballistics Meteorologist for this firing was Harold M. Richart.

DISCUSSION

Wind data for the first 216 feet above the surface were obtained from a system composed of five Aerovanes mounted on a 200-foot tower and cabled to component wind indicators.

From 216 to 4,160 feet above the surface, wind data were obtained from T-9 Radar-observed balloon ascents.

Temperature, pressure and humidity data, along with upper wind data from 4,160 to 73,300 feet above the surface, were obtained from standard rawinsonde observations.

Mean wind component values in each ballistic zone were determined from vertical cross sections by the equal-area method.

Theoretical rocket performance values and ballistic factors as a function of altitude were provided by ASO and are the basis for data appearing in Table I.

	•		
PAYLOAD		215	Pounds .
CORIOLIS DISPLACEMENT	WEST	6.4	Miles
MATERIAL MATERIAL	TIME	20.0	spuoses.
SECOND-SIAME LGNIILON	ALTITUDE	35,760	Feet MSL
DDAV	TIME	236	Spuones
FEAN	ALTITUDE	716,000	TSH JBBA
	неар	2,158	Ham/80Tim
UNIT WIND EFFECT	CROSS	2.244	Man/8011m
	TAIL	2,167	M11es/MPH
TOWER TILT EFFECT		14.53	Miles/Degree
المسترين الم		THE CONTRACTOR IN PRESENT WITHOUT WITH	herest services to management of the services

TABLE I. THEORETICAL ROCKET PERFURMANCE VALUES NIKE-HYDAC STV 75, SR-06

LAYERS IN FEET ABOVE GROUND	800- 1000	1000- 1400	1400- 2000	2000- 2500	2500- 3000	3000- 3500	3500- 4160	4160-11000	11000-16000	
BALLISTIC FACTORS	.135	.075	.070	.031	.029	.052	.048	.082	.058	
LAYERS IN FEET ABOVE GROUND	15- 60	60-108	108-148	148-184	184-216	216-300	300-400	700-600	900-800	

BALLISTIC FACTORS

LAYERS IN FEET ABOVE GROUND

BALLISTIC FACTORS -.018

16000-21000

.039

-.012

21000-26000

.071

-.012

26000-31770

.065

.031

.132

31770-36000

.058

36000-41000

.027

.032

41000-46000

.010

,018

46000-56000

.009

.011

56000-66000

-.024

.001

66000-73300

-.018

TABLE II. BALLISTIC FACTORS NIKE-HYDAC STV 75, SR-06

		MST	K-1	2.5E	5.5	3.5	3.5	4.0
	S	0600 MST	N-S	1.03	2.5N	4.0	1.5	2.0
HOUR		MST	EH	0.0	1.58	2.0	2.0	2.5
MEAN WIND COMPONENTS IN MILES PER HOUR		0545 MST	N-S	0.0	3.0N	5.5	5.5	5.0
IN MIL	3	MST	E-W	10W	2.0E	2.5	2.5	2.0
PONENTS		0530 MST	N-S	3.0N	7.¢	11.0	7.0	0.7
IND COM	2	MST	E-W	2.0W	1.5E	2.5	3.5	3.5
MEAN W		0500 MST	N-S	3.5N	7.0	11.0	8.0	8.0
		MST	M-8	2.0W	1.0	0.0	2.0E	3.0
		0430 MST	N-S	1.0N	2.0	4.0	5.0	7.0
	AERO-	VANE		1	7	ო	4	'n

			MEAN W	IND COM	PONENTS	MEAN WIND COMPONENTS IN MILES PER HOUR	ES PER	HOUR		
AERO-				,		8				
VANE	0190	0610 MST	0624 MST	MST	0630 MST	MST				
	N-S	E-W	N-S	E-W	N-S	R-₩	N-S	H2	N-S	E-W
н	1.58	1.5E	1.08	0.0	.0*0	0.0				-
8	3.0N	2.5	2.0N	2.5E	3.0N	2.0E				
K)	5.5	1.5	4.5	4.0	5.5	4.0				
7	3.5	1.5	5.0	4.0	5.5	4.0				
Ŋ	3.5	1.5	5.0	4.0	0.9	4.0				

TABLE III. ANEMOMETER WIND SPEED AND DIRECTION NIKE-HYDAC STV 75, SR-06

5 = 200 Feet 3 = 128 Feet 4 = 168 Feet * Heights corresponding to Aerovane Numbers: 1 = 35 Feet 2 = 88 Feet

N-S E-W N-S E-W N-S E-W N-S E-W N-S E-W N-S	TAVRDG			MEAN W	MEAN WIND COMPONENTS	PONENTS	IN MILES	Per	HOUR		
N-S E-W N-S E-W N-S E-W N-S E-W N-S N-S <td>IN FEET ABOVE</td> <td>0430</td> <td>1 MST</td> <td>0500</td> <td>2 MST</td> <td>0530</td> <td>3 MST</td> <td>0545</td> <td>4 MST</td> <td>0090</td> <td>5 MST</td>	IN FEET ABOVE	0430	1 MST	0500	2 MST	0530	3 MST	0545	4 MST	0090	5 MST
7.0N 2.5E 6.5N 2.5E 5.0N 0.5E 5.0N 2.0E 0.0 6.0 2.0 4.0 2.5 3.5 1.0 3.5 1.5 0.5 4.5 0.0 2.0 0.5 2.0 1.0W 1.5 1.0 1.0 2.0 0.0 3.0 2.0W 0.5 2.0 4.5 2.0W 1.0 0.5S 0.0 3.0 1.5 3.0 4.0 4.0 4.0 2.5 4.0W 0.5E 6.0 2.0 2.5 4.0 5.5 0.0 3.5 6.0 1.5 5.5 1.5 5.0 2.5 0.0 3.5 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 3.0S 14.5 4.0 18.5 4.5 17.0 9.5	GROUND	N-S	E-W	N-S	E-W	N-S	R-8	N-S	E-W	N-S	E-W
6.0 2.0 4.0 2.5 3.5 1.0 3.5 1.5 0.5S 4.5 0.0 2.0 0.5 2.0 1.0W 1.5 1.0 1.0 2.0 0.0 3.0 2.0W 0.5 2.0 4.5 2.0W 1.0N 0.5S 0.0 3.0 1.5 3.0 6.0 4.0 2.5 4.0M 0.5E 6.0 2.0 2.5 4.0 5.5 0.0 3.5 6.0 1.5 5.5 1.5 5.0 2.5 3.0 5.0W 6.0 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 3.0S 14.5 4.0 16.0 2.5S 16.0 3.0 15.0 7.0S 6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 14.0		7.0N	2.5E	6.5N	2.5E	5.0N	0.5E	5.0N	2.0E	0.0	3°0E
4.5 0.0 2.0 0.5 2.0 1.0W 1.5 1.0 1.0 2.0 0.0 3.0 2.0W 0.5 2.0 4.5 2.0W 1.0 0.5S 9.0 3.0 1.5 3.0 3.0 6.0 4.0 2.5 4.0W 0.5E 6.0 2.0 2.5 4.0 5.5 0.0 3.5 6.0 1.5 5.5 1.5 5.0 2.5 3.0 5.0W 6.0 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 3.0S 14.5 4.0 16.0 2.5S 16.0 3.0 15.0 7.0S 3.5 16.0 4.0 16.5 5.0 18.5 4.5 17.0 9.5 6.0 18.5 7.0 18.5 8.0 18.0 14.0 9.5		0.9	2.0	4.0	2.5	3.5	1.0	3.5	1.5	0.58	1.5
2.0 0.0 3.0 2.0W 0.5 2.0 4.5 2.0W 1.0N 0.5S 0.0 3.0 1.5 3.0 3.0 6.0 4.0 2.5 4.0W 0.5E 6.0 2.0 2.5 4.0 5.5 0.0 3.5 6.0 1.5 5.5 1.5 5.0 2.5 3.0 5.0W 6.0 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 3.0S 14.5 4.0 16.0 2.5S 16.0 3.0 15.0 7.0S 3.5 16.0 4.0 16.5 5.0 18.5 4.5 17.0 9.5 6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 9.5		4.5	0.0	2.0	0.5	2.0	1.0W	1.5	1.0	1.0	1.0
0.5S 0.0 3.0 1.5 3.0 3.0 4.0 4.0 2.5 4.0M 0.5E 6.0 2.0 2.5 4.0 5.5 0.0 3.5 6.0 1.5 5.5 1.5 5.0 2.5 3.0 5.0W 6.0 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 3.0S 14.5 4.0 16.0 2.5S 16.0 3.0 15.0 7.0S 3.5 16.0 4.0 16.5 5.0 18.5 4.5 17.0 9.5 6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 14.0		2.0	0.0	3.0	2.0W	0.5	2.0	4.5	2.0W	1.0N	1.0
4.0M 0.5E 6.0 2.0 2.5 4.0 5.5 0.0 3.5 6.0 1.5 5.5 1.5 5.0 2.5 3.0 5.0W 6.0 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 3.0S 14.5 4.0 16.0 2.5S 16.0 3.0 15.0 7.0S 3.5 16.0 4.0 16.5 5.0 18.5 4.5 17.0 9.5 6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 14.0	800-1000	0.58	0.0	3.0	1.5	3.0	3.0	0.9	4.0	2.5	1.0W
6.0 1.5 5.5 1.5 5.0 2.5 3.0 5.0W 6.0 4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 3.0S 14.5 4.0 16.0 2.5S 16.0 3.0 15.0 7.0S 3.5 16.0 4.0 16.5 5.0 18.5 4.5 17.0 9.5 6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 14.0	1000-1400	4.0N	0.5E	6.0	2.0	2.5	4.0	5.5	0.0	3.5	2.0
4.0 7.0W 1.0S 9.5 1.5 10.0 6.0 13.5 0.5 3.0S 14.5 4.0 16.0 2.5S 16.0 3.0 15.0 7.0S 3.5 16.0 4.0 16.5 5.0 18.5 4.5 17.0 9.5 6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 14.0	1400-2000	6.0	1.5	5.5	1.5	5.0	2.5	3.0	S.0W	6.0	3.0
3.08 14.5 4.0 16.0 2.58 16.0 3.0 15.0 7.08 3.5 16.0 4.0 16.5 5.0 18.5 4.5 17.0 9.5 6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 14.0	2900-2500	4.0	7.0W	1.08	9.5	1.5	10.0	6.0	13.5	0.5	13.0
3.5 16.0 4.0 16.5 5.0 18.5 4.5 17.0 9.5 6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 14.0	2500-3000	3.08	14.5	4.0	16.0	2.58	16.0	3.0	15.0	7.08	13.5
6.0 18.5 7.0 18.0 9.0 19.5 8.0 18.0 14.0	3000-3500	3.5	16.0	4.0	16.5	5.0	18.5	4.5	17.0	9.5	14.5
	3500-1160	6.0	18.5	7.0	18.0	9.0	19.5	8.0	18.0	14.0	18.5

TABLE IV. PILOT-BALLOON-MEASURED WIND DATA NIKE-HYDAC STV 75, SR-06

T.AYRRS			MEAN W	IND COM	Ponents	mean wind components in miles per hour	es per	HOUR		
IN FEET		9		,						
ABOVE	0610 MST	MST	0624 MST	MST	0630 NST	MST				
	N-8	A-a	N-S	E-W	N-S	H-3	N~8	K-2	N-8	H-%
216- 300	1.5N	2.58	2.5N	0.58	NO.4	30.6				
300- 400	1.08	2.0	0.0	3.0%	23 E3	1.5				
400- 600	2.0N	0.0	2.08	1.08	0.58	1.5				
000 - 009	4.5	3.04	1.0N	1.5W	3.0N	1.5W				
800-1000	6.0	5.0	ລ.	1.0	3.0	2.0	. .			
1000-1400	3.0	4.0	2.5	4.5	3,5	0.0				
1400-2000	2.5	6.5	2.5	7.5	3.5	3.3				
2000-2500	1.5	8.5	1.0	ສ. ຄ.	3.0	6.0				
2500-3000	3,58	15.0	5.08	13.5	6.58	15.0	-			
3000-3500	7.0	14.0	7.5	14.0	11.0	15.0				
3500-4160	11.5	18.5	14.0	17.5	11.5	16.0				

TABLE IV. PILCY-BALLOON-MEASURED WIND DATA (CONT) NIKE-HYDAC STV 75, SR-06

1 40000	X	EAN WIN	MEAN WIND COMPONENTS	• 1	IN KNOTS	
IN FEET		1		2		
ABOVE	0330	0330 MST	0630	0630 MST		
GNOONS	NS	E-W	N-S	H-2	N-S	M-3
4160-11000	16.08	19.0W	15.58	18.5W		
11000-16000	18.5	22.0	9.5	26.0		
16000-21000	25.5	30.5	10.0	28.0		
21000-26000	25.0	30.0	10.5	29.0		
26000-31770	23.0	40.0	5.0	28.5		
31770-36000	20.5	35.5	5.0	28.5		
36000-41000	7.0	39.5	0.0	43.0		
41000-46000	0.0	45.0	0.0	43.0		
46000-56000	0.0	33.0	0.0	29.0		
26000-66000	8.5N	14.5	3.5N	19.5		
66000-73300	0.0	15.0	0.0	23.0		

TABLE V. RAWINSONDE-MEASURED WIND DATA NIKE-HYDAC STV 75, SR-06

STATICN ALTITUDE 3989.0 FEET MSL 14 JAN- 69 0330 MRS MST ASCENSION NO. 26

SIGNIFICANT LEVEL DATA 0459003902 WHITE SANDS SITE

MSTM SITE COORDINATES E 488,580 FEET N 185,045 FEET

TABLE VI

PRESSURE	SECHETRIC	TEMPE	RATURE	REL.HUM. PERCENT
HILLIBARS	-1	REES	ENTIGR	
4-518	8	3.8	9-0-	73.0
9	312.	13.4	6.8	0.49
9	4	15-3	9•9	
9	•	15.1	6•0	38.0
-		13-1	•	33.0
708.0	0.4166	3.8	-5.4	51.0
81.	10948.1	•		•
9		0.5	-12.2	
S	12055.8	Ĭ	•	
9	•	-1.5	-16-1	•
623-0		-3.0	•	
•	13792-5	-3.8	-15.2	•
	14220-4	1.4-	•	
249.0	16546.7	-8.6	-13.3	0.69
455.0	19161.0	-13.8	9	
	21793.0	9*61-	-22.4	
•	24314.9	•		•
	31024.1		-49-2	
	34563-1	-52,2	•0	** "0-
224-0		8-35-	• 0	** 0-
	37659.1	-55.9	•0	** *0-
214-0		-53.1	•0	** *0-
•		-53.5	•0	-0- **
		•	•	** *0-
100.0	53825.5		•0	** 0-
•	·	-74.6	•	** *0-
62.0	63065.5	-72.2	•0	-0- **
6	64037.0	0-55-	•0	** *0-
9	6962	-68.1	•	** •0-
26-0	80500.9	-60.2	•	** *0-

** RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITULE 3989.0 FEET MSL 14 JAN. 69 6330 HRS MSI ASCENSION NU. 26

SIGNIFICANT LEVEL DATA 0459003902 WHITE SANDS SITE

MSTM SITE CLORDINATES E 488,580 FEET N 185,045 FEET

TABLE VI (Cont)

PRESSURE GEOMETRIC TEMPERATURE REL-HUM. ALTITUDE AIR DEWPOINT PERCENT NILLIBARS MSL FEET DEGREES CENTIGRADE

13.0 94957.4 -55.5 0. -0. ## 12.0 96654.3 -53.7 0. -0. ## RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

STATION ALTITUDE 3989.0 FEET MSL 14 JAN. 69 0330 HRS MST ASCENSION ND. 26

UPPER AIR DATA 0459003902 WHITE SANDS SITE

MSTM SITE COORDINATES E 488,580 FEET N 185,045 FEET

TABLE VII

INDEX OF REFRACT HON	0002	000027	.00025	.00024	00024	.00023	•00053	· 000 53	.00()22	.00022	-00075	.00021	.00020	1.000201	.00020	•00019	.00019	.00019	.00019	.00019	.00019	.00018	.00018	.00017	.00017	.00016	910	.00016
TA SPEED KNOTS	00.	S 4	•	6	7		S.	7	ċ	0	7	e m	,	'n	5	9	8	6	3	0	ð	Ġ.	8	8	8	8		¢.
MIND DAT DIRECTION DEGREES(TN)	0.6	331.7 303.9	9	8	8	#	7	\$	7	3	3.	7	0	3	7	•	6	Ç,	6	0	-	٠ ج				\$	\$	5
SPEED OF SOUND KNOTS	48.	662.5	09	59.	658.8	57.	ທີ	54.	52.	51.	,		•	645.9		643.3	•		640.1	639.1	38.	37.	36.	635.0	33.	2	31.	630.2
DENSITY GALCUBIC	1103.5	038.	007.	-	1	3	0	,	4.	1.	6	6	9	ö	7.	ŝ	7	æ	9	9	7	ဆ	9	•	ന	713.6	00	689.4
REL.HUN. Percent	73.0	0 9	Š	m,	•	è	39.2	4	4.	•	•	•	9	27.0	ç	9	9	4.	58.4	6.	7.	ร	0	6.45	6		ġ	56.2
EMPERATURE Dempoint Es centigrade	10.6	4 (1 (5)	•	-2-3	•	•	•	-3.7	-4-1	14.5	-5-0	-6-1	-10.7	-15.4	-12.6	-18.9	-18.1	-12.0	-10.4	₽	4.9-	-8-	1-6-	-11.4	-13.2	-14.9	-16.7	-18-6
TEMP AIR Degrees	B 4	25.2	4	3	2.	_	6.6	8-6	7.4	6.1	4 - 8	3.6	2-7	1.1	0.7	4.0-	-1-1	-2-0	-3-3	-4-2	-5.5	0-9-	-6-8	-1-7	-8-5	-6-5	•	-11-5
PRESSURE MILLIBARS	879.4 879.0	863.2	S	~	\sim	8	m	Ch .	S	N	œ	S	692.6	ě	٠	.+		Ġ			•		•	560-8				518.3
GEGMETRIC ALTITUDE MSL FEET	0.0	4500.0 0000.0		•	500.	000	500		8 500.0	0.0006		n0000	0 200	11000.	11500.0	2000-	2500-	13000-0		4000	4 500-	15000.0	15 500-0	16000.0	0.5	7000.	17500.0	18000.0

STATICN ALTITUGE 3989.0 FEET MSL 14 JAN. 69 0330 HRS MST ASCENSION NU.

UPPER AIR DATA 0459003902 WHITE SANDS SITE

WSTM SITE CUORDINATES E 488,580 FEET N 185,045 FEET

TABLE VII (Cont)

ANDEX OF Refraction	00018	1000	. 00015	.00014	.00014	*1000	.00014	.00013	.00013	. 000 33	.00012	.00012	.00012	.00012	. 000 L	.00011	.0001	.0001A	.00011	.0001	.00010	.000010	07000-	.000010	.00010	-000010
TA SPEEU KNOTS	29.9							•			•			•		•		•		•			٤	3		
WIND DAT DIRECTION DEGREES(TN)	237.6	9 6	39.	39.	39.	•	•	-		•	-	•	•	-	6.46%	•		-	•	•	•	-	233.8	•		231.7
SPEED OF SOUND KNOTS	628-9	626.4	•						9-219				612.3	610.6	6-809	7-109	605.5	603.7	602.0				•		591.6	
DENSITY S GM/CUBIC METER	678.6									•	•			•												445.7
REL-HUM. Percent	51.8						16.1		65.6	0.09	54.5	50.9	20-2	50.5	2-05	90.0	49.8			•			48.5	•	2	445-14
ERATURE DEWPGINT CENTIGRADE	120.4	22	7	-22.3											-36.0						4	-45-2	•	C-17-	S)	1-27-
TEMPI AIR Degrees	3 1	-14.5	•		6-11-	6		j	-	,	E,	4	6.	7	-28-7	0	-	2.	4	5	•	-38-2	-39.6	-	~	-43-7
PRESSURE MILLIBARS	• :	488-3	478.5		459.5	•	•	•	453.4				389.3			364.8	357.0	349.4	341.9	334.6	321-4	320.4			300 • 3	583.5
GECMETRIC ALTITUDE MSL FEET	8 500	19500-0	0000	0500.	•	21 500-0	22600-0	2500.	3000-	3 50 C	24000-0	4500	5000.	5 500.	V	26 500.0	70001	7 500-	0-00082	8 500°	9000.	29500.0	30000-0	30500-0	10001	31500.0

AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION. *

1.000098 1.000096 1.000094

46.1 44.7 43.9

229-7 229-7 228-6

588.0 586.4 584.4

438.2 430.9 423.7

34.8** 28.0** 21.2**

1.54.5 1.54.5 1.00.1

-46.5 -45-1

286.9 280.3 274.0

UPPER AIR DATA	7065005,500	HHITE SANDS SITE	
	STATION ALTITUDE 3989.0 FEET MSL	14 JAN. 69 0330 HRS MST	ASCENSION NO. 26

MSTH SITE CUURDINATES E 488,580 FEET N 185,045 FEET

A CAN TO PROCEED AND THE WORLD ASSESSMENT RESIDENCE OF A CONTRACT OF A CONTRACT OF A CONTRACT OF A CONTRACT OF

TABLE VIN (Cont)

INDEX OF Refraction	00	60000	60000	. 00008	.0000	.0000	.0000	• 0000	90700	.0000	.0000	-00000	.0000	.0000	.00000	90000	.0000	90000	•0000	90000 -	•0000•	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
SPEED KNUTS	43.9	\$	ಸ್ಕ ಕ	6.		\$	<i>ಪ</i> •	4	6	è	ຄຸ	2	÷	7.		å	8	&	*	ç.	Ġ.	ċ	~	'n	*	ŝ	9	:	2	er F
WIND DAT DIRECTION DEGREES(IN)	70	3	•	9	2	8	9	3.	2:	4	3	3	259.8	÷	ż	è	2	3	6	6	5	8	2	-	7.	φ.	0	271.5	~	Ť
SPEED OF SOUND KNOTS	N	80.	52	77.	75.	74.	\sim	74	72.	76.	17.	77.	77.	2	22	1.1	17	20	75.	3.4	73.	12.	77.	2	. 69	567.9	56.	-2	9.5	563.5
ENSITY :	416.7	٠		2							•		319-5				•		•	•			•							222-6
00																														
<u>0</u> 0	*	*		?	*	*	\$	*	*	*	*	*	*	7	*	*	*	*	*	*	*	*	*	*	*	* *	* *	*	*	*
a 9	*	*	*	*	+* *0-	*	*	** *0-	** *0-	** "0	** "0"	** *0-	** "0"	** *O-	** •0-	** •0-	** "0-	** "0-	** •0-	** *0-	** "0"	** "0-	** *0-	** *01	** *0-	•	*	** *0-	** "0-	** *0-
E REL.HUM. D Int Percent G Rade	14-4#	70-2 7-6*	*6 0	* *0"	* *0	* 70-	* *0	1		•	0-	0-	Ö	1	•	ı	Q	0-1	0-	0-	0-	01	01	01	0-	-0-	* *0-	* *0-	0-	•
RATURE REL.HUM. D Dempoint Percent G Entigrade	*364.9 14.4*	0.6 -70.5 7.6*	2.0 ~65.2 0.9*	± 0 = 0 = 0 = € E	* *0 **	* 70 · 0 · 2.5	* "0" "0 6"9	1 *0	7.1 0.	-3 O0	3-1 00	3.2 00	0-	3,3 E.E.	- 0 50	3-4 0	00 5-	3-8 00	0- 00	5.5	6-3 00	7-1 00	7.9 0. 0. 0.	-0-	00 9-6	0-4 0 0-0	* -0-	* 0 0 1	2.9 00	•
TEMPERATURE REL.HUM. D AIR DEWPOINT PERCENT G EGREES CENTIGRADE	7.8 -49.3 -64.9 14.4*	61.7 -50.6 -70.5 7.6*	55.7 -52.0 -65.2 0.9%	* "0" "23.3 O. "0" "0" *:	43.9 -54.5 00. *	* -55-7 00. +	32.5 -56.9 00. #	.1 -58-1 0-	.7 -57.1 0	0 - 164.3 C.	.4 -53-1 00	.5 -53.2 00.	.7 -53.2 00.	.0 =53.3	.4 -53.4 0.	- 63.4 0.	0 S = 153 - 15	.2 -53-8 00	0- 0- 0- 1-64-1	.7 -55.5 00	.6 -56.3 00	.6 -57.1 00	.7 -57.9 00.	54.9 -58.8 00.	1.1 -59.6 00	7.5 -60.4 00.	* 061-5 00- *	0.5 -62.1 00. *	7-1 -62-9 00	-43.7 0

AT LEAST UNE ASSUMED RELATIVE HUMIDITY VALUE MAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.C FEET MSL 14 JAN. 69 0330 HRS MST ASCENSIUN NU. 26

UPPER AIR DATA 0459003902 WHITE SANDS SITE

with the first t

HSTM SITE CUGRUINATES E 488,580 FEET N 165,045 FEET

TABLE VII (Cont)

INDEX OF REFRACTION	000.	000	000	00	000.	000	000	000-	000	000	000	000	000	000	000	000	S	000	000-	9	000	900	98.	000	000	000	000	8	8	1-000024
TA SPEED KNOTS	Ż	-	8	45.1	2	3	ж Ж	7.	1		7	2	7	2	9	3	å	7.	• (D)	6	*	6	0	•	0	6	-	•	•	•
WIND DAT. UIRECTION DEGREESCINA	73	74	72	6.012	69	89	66	79.497	264-1	564.3	264.0	763.6	263.1	764.0	764.0	263.8	76425	265.6	765.6	564.9	270.8	5.617	284.5	288.5	297.8	307.6	310.8	313.0	308-8	303.0
SPEED GF SOUND KNUTS	62.	561.3	60.	559.1	58.	57.	56.	56.	55.	540	S	53.	52.	520	51.	50.	50.	49.	48.	548.9	49.	49.	.64	50.	50.	50.	51.	S	510	51.
DENSITY GM/CUBIC METER	18.	0	60	205.2	00	96.	91.	87.	83.	79.	740	70.	67.	63.	56.	55.	52.	48.	45.	41-	37.	33.	30.	26.	43.	-07	17.		j	107-9
.HUM. CENT	*	*	∜ ₩	* #	中分	*	#	*	*	*	*	*	*	쓨 북	*	#	*	*	# #	*	₽ ₩	*	*	*	*	#	*	#	☆	# #
REL . I PERCI		0	-0-	-0-	0-	0	-0-	-0-	-0-	-0-	-0-	0-		-0-	-0-	-0-	-0-	-0-	-0-	0	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0	-0-
TEMPERATURE R DEMPUINT EES CENTIGRADE	0.	. 0	•	•0				• •	•	•0	•	•0	0°	•	,	•0	0	°O		•0	•0	ပံ	•0	• 0	.	0.	0.	•	• •	•0
TEMP AIR Degrees	-64.5	-65.3	99-	~	-61.5	8	သ	1-69-	9*69-	1-01-		- 31.2	~	- 72-1	~	-73.0	-13.5	0-42-	4.41-	- 14.5	-14.2	-14-0	-73.8	- 13.6	-73.3	-73.1	6-31-			-72-2
URE	9	٠	7	7	ဘ	0	12	2.60	107.0	104.3	101.7	1.66	9.75	94.1	1.16	4-68	27-1	84.9	82-7	O	78.5	Q	74.6	1.4	30-8	0.69	61.2	65.5	63-8	62-2
PRESSURE MILLIBARS	130	12	12	77	,	~	~	~	_		7																			

AT LEAST UNE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION. *****

STATION ALTITUDE 3989.0 FEET MSL 14 JAN. 69 0330 HRS MST ASCENSION NO. 26

UPPER AIR DATA U459003902 WHITE SANDS SITE

#SYM SITE CUORDINATES E 488,580 FEET N 185,045 FEET

TABLE VII (Cont)

INDEX OF REFRACTION	0000	-00005	.00002	002	-00005	.0000	-00005	.0000	.0000	1.000018	-00001	-000C1	-00001	*0000°	.0000	-000C1	100000	10000	.0000	.0000	.00000	*0000	.0000	,00000	.0000	.0000	.0000	-00001	•	~
T'A SPEED KNOTS	12	Ġ	2		2	_	ö	7.	14-0	10.4	6-8	6.8	•		7	7.	ä	Э.	3	21.3	•	8	7.	å	8	6	7	4.	27.1	6
WIND DATE DIRECTION S	292.9	286-7	285.8	288-8	294.8	297.B	299.3	297.2	294.3	302.5	310.7	296-6	283.0	276-7	270-1	261.7	254-5	257.8	261.3	265.6	276-4	278.5	285.4	285,5	284.9	280-7		270.6	64.	60
SPEED OF SOUND KNOTS	553 .9	556-2	556.5	556.6	556.7	556.8	557.0	557.1		557.3	•	557.6	558.1	558.5	559.0	559.5	559.9	560.4	560.9	561-3	561.8	562.2	562-7	563.2	m	564-1	564.5	565.0	565.5	iQ.
DENSITY GM/CUBIC METER	90	100.9	98.3	95-8	G	91.0	88.7	86.5	84.3	82-1	80.0	78.0	26.0	74.0	72.1	30.2	68.4	9.99	6-49	63.2	61.5	58.8	8	56.8	Š	53.9	2.	7	•	48.5
LN-		*	*	*	*	##	特	带并	# *	*	*	*	*	*	*	#	*	*	#	*	*	*	*	*	*	*	*	*	*	*
= -	÷	*	*	ℼ	•	•	77	Ħ	न	_	75	77	*	ж	7	*	~			75	₹	*	*	*	*	Ħ	*	¥	*	*
EL.H ERCE	* *0-	* 0-	* "0"	0-	•	-0-	-0-	70-	70-	•	•	•	# ·0-	•	* 0-	•	•	•	•	× •0-	•	* 0-	•	* *0-	* 0-	* 0-	*	* 0:		* 0-
NT P ADE		0	•	-0-	•	-0-	-0-	-0-	•	-0-	-0-	-0-	•	-0-	.0-	-0-	.0-	-0-	-0-	-0-	-0-	-0-	-0-	•0-	. 0-	•	* •0-	•0-	-0-	•
RATURE R DEWPOINT P ENTIGRADE	•	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	-0-	00-	-0-	-0-	.0-	-0-	0- 0-	-0- 00	-0-	-0-	-0-	.0-	-0-	•0-	. 0-	-0-	* •0-	•0-	-0-	-0-
EMPERATURE R Dewpoint P Es centigrade	70.8 0.	-1 -69-1 00-	.0 -68.9 0.	68-8 00.	.8 -68.7 00.	.4 -68.6 00.	-1 -68.5 00.	·8 -68.5 0· -0·	.5 -68.4 00.	68.3 00.	7.1 -68.2 00.	5.9 -68.1 00.	-67.7 00.	3.7 -67.4 00.	-6 -67.0 00.	-66-7 00-	.6 -66.4 00.	.0 -66.0 0.	-6 -65-7 00.	5-3 00.	-8 -65-0	.9 -64.7 00.	.0 -64.3 00.	-1 -64.0 00.	.3 -63.6 00.	.5 ~63-3 00.	*-1 -62.9 00. *	-9 -62-6 00.	.2 -62.3 00.	9-4 -61-9 00-

AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE MAS USED IN THE INTERPOLATION. *

STATION ALTITUDE 3989.0 FEET MSL 14 JAN. 69 0330 HRS MST ASCENSION NO. 26

UPPER AIR DATA 0459003902 WHITE SANDS SITE

WSTM SITE COORDINATES E 488,580 FEET N 185,045 FEET

TABLE VII (Cont)

	2	2	11	01		0.4	60	60	60	60	60	80	80	80	80	90	2 0	20	20	20	10	20	90	90	3	90	ď	900	50	92	20	0.5
INDEX	OF REPACTION		1.,0000	3.00001	8	•	1.0000	•	8	•	8	1.000008	1.0000	1.0000	1:000008	A . 0000	1.0000	A . 0000.	1-0000	1.0000	1.0000	A .: 00 00:	1.0000	1.000006	7.0000	œ	8	000	000	0000	_	1:0000
<	SPEED		7	35.2	8		-	37.4		~	38-2	8	6	á	•	40-3	40-6	4004	40-2	40-2	40.2	40-2		39-8	Ġ			3			. 42-1	8
MIND DAT	DEGREESTION			252.3		•	254.4	a	254.6	258-6	262.6	265.9	266.3	270.7	272.5	274.1	275.3	274.9	274.4	274.4	274-6	274-8	274.3	273.8	273.6	273.7	273.8	273.2	272.4	271.3	ģ	267-9
SPEED OF	SOUND		いちなる。今	566.8	567.3	567.8	568-2	568.4	568.6	568.9	569.3	569.3	569.5	2.695	569.9	570.2	•	250.6	570-8	571.0	571-2	571.5	571.7	511-9	1		572.5	. 572-7		573.2	7	573.6
ENSITY	GM/CUBIC METER	<u> </u>	•				•		40-5	•				35.8	34.9	34-1	33.2	32.4	31-6	30.8	30.1	29.4	æ	-	1.	•	5	5	3	3		÷
-HUN-	F Z	_	*	*	*	- * *	#	*	*	*	*	*	*	*	*	*	*	*	*	*	* ·	* *	*	*	*	·- *	*	*	*	*	*	* *
H	w C		•	•	-0-	0	-0-	0	•	•	•	0	•	•	•	•	•	•	٥	•		•	•	•	•		•					
RE	PERC		0	-0-	ī	ı	i	ı	Ī	ī	ĭ	ĭ	ĭ	ĭ	0	0	0	0	Ö	ĭ	Ĭ	0-	9		9	0	0	0	0 .	ĭ	Ĭ	ı
%	CENTICARDE	i	•	•	•	1	•		••	•	•	•		1	0-	•	•	0-	•	•	•0	•	•	•	•	•	•		•	•	•	•
EHPERATURE R	Q. UU		.	•	-0 6-	5 0.	-2 0-	0.0	- 0 6-6	- 0 2.5	- 0 9-		.0	-0	1 0		58.6 0	-0		- 0 T-RC	- 0 67.2	0 0		1 0 0 1		-1 0-	6.9 0.	6-8 0-	~ •0	- 0 -0	- 0° E-9	•
EHPERATURE R	DEWPOINT P		-61-6	-61-2 0.	-0 6-09-	-60.5	-60-2 0-	00 0.09-	- 0 6-6	25.7 0.	-59.6	-29-4	-59.2	- 29-1	1 0 5,584	1.086-	- 28.6	+00 4786+	-58-2	- '0 T-RG- 0-6	8-6-17-9 0-	1 -0 8-16-1 18		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	1 -01 -01 -0 -0 - 1 - 1 - 1 - 1 - 1 - 1		6-1 -56-9 0.	5.7 -56.8 0.	-56-6 0-	5.0 -56.5 0.	4.6 -56.3 0.	. 0 7-95
PRESSURE TEMPERATURE R	AIR DEWPOINT P Illibars degrees centigrade		0 23.7 -61.6 0.	28.0 -61.2 0.	27.3 -60-9 0.	26-7 -60.5 0	26.060.2 0.	-0 25:460:0 0	-0 24.8 -59.9 0	24.2 -55.7 0.	23.6 -59.6 0.	23.1 -59.4 0.	22.5 -59.2 0.	-0 22.0 -59.1 0.	1 0 584	0 /-8-1 0-72	0	-0 +-58-4 0- 0-	18-5 -58-2 0.	- '0 T-RG- 0-67	48.6 -57.9 0.	1 *0 8*1C: 1*8T		1 10 -03144 0.	1 10.8 12.1.5 C	-0 10.5 -57.1 0.	16-1 -56.9 0	15.7 -56.8 0.	15.3 -56.6 0	2000.0 15.0 -56.5 0.	2500.0 14.6 -56.3 0.	4:3 -20-1 0-

** AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE, MAS USED IN THE INTERPOLATION.

MSTM SITE COORDINATES E. 488,580 FEET	N 1854045 FEET	-	LNDEX	REFRACTION	1.000005	¥+000005	1.000005	1.0000005	400000	1.00000		*00000**	
HSTM SITE	Ź	-	TA SPEED	KNOTS	43.5	44.1							
_			MIND. DATA DIRECTION, S	Degrees(In)	266.7	266.0	! !						
DATA 202 Site	3	(Cont)	SPEED OF	KNOTS	573.8	574-0	574-3	4 17			575.9	576.6	
UPPER AIR DAIA 0459003902 WHITE SANDS SITE	2000	TABLE VII (Cont)	DENSITY :	METER	22:•4	21.8	21.3		0 · 77	20-2	19.7	19.2	
3	Ē		REL-HUM- PERCENT		** -0-		# C				-0- **	-0-	
TSW.	70		TEMPERATURE R DEWPOANT	CENTIGRADE	0	6	•	•	•0	•	•	•	
9.0 FEE	SAN UEC		TEMP	DEGREES	-56.0		9 4 4 4	0 0 0 0	7,00-	156.9	1-04-4	-53.9	, ,
TITUDE 398	MO		PRESSURE	MILLIBARS DEGREES	9.61	4 6 1	12.0	1363	13-0	12-7	12.4	12.1	
STATION ALTITUDE 3989.0 FEET MSL	ACTENCION NO.	20152	GEOMETRIC ALTITUDE		93500.0		0.000	0-000+6	95000.0	95 500-0	0.00096	96500.0)))))

AT LEAST DINE ASSUMED RELATIVE HUMZDITY: VALUE MAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989-0 FEET MSL
14 JAN. 69
0530 HRS MST
ASCENSION ND. 26

MANDATORY LEVELS 0459003902 WHITE SANDS SITE

WSTM SITE CUORDINATES E 488,580 FEET N 185,045 FEET

TABLE VILL

PRESSURE G	GEUPOTENTIA:		TEMPERATURE AIR DEMPOINT	REL-HUM.	WIND	CATA.
MILLIBARS	FEET	DEGREES	CENTIGRADE		DEGREES (TN)	KNOTS
ď	4525-	•	0.2	37.		•
<u>.</u>	6606.	12.2	-2.9	35.	9.	
ď	8360-		-3.9	43.	.7	
Č	10211-	•		44.	8.	•
ď	12168.	٠	-20-2	21.	4.	•
å	14252.		-5.7	94.	4.	
4	16485.	-6.5	-13.2	20.	9.	•
d	18889.	3	-22.0	48-	4.	
-	21494.	Ġ	-22.3	76.	۲.	
ċ	24342.	4.	$\overline{}$	51.	63	
ċ	27483.	'n	O,	50.	27	•
-	30574.	-45.4	-49-2	48.	ů.	
3		-53.2		***O-	9.	
ď		1.53°.		***0-	·	•
10		-54.6		***0-	4.	
<u>.</u>		-55-8		***0-	6.	
10		-66.0		***0-	.7	•
ċ	•	-7100		***0-	.7	•
-		4-41-		***0-	.7	
ċ	532.	-73.2	•0	***0-	6.	19.9
d		-1002-		***0-	σ.	
-		-68.4		***0-	2.	
å	149	-66.2	. 0	***0-	٠,	•
-	727	2	•	***0-	2.	•
	669		0	***0-	0.	
20.0	181	-58.4	• •	***0-	274.9	40.4
	154		.0	***0-	4	41-4

AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

ì

TABLE IX

REL.HUH. PERCENT		•	•	•	•			•	19.0		•	•							•	•		•		** •0-	•	** *0-	•			** *0-	** *01
ESATURE Dewpuint	nt i gr	0.6-	•	2.7	•	•		18.	-18.4	•	•		•					ŧ	٠ ئ ئ	•		34.				• •			• •	• •	•
TEMP AIR	DEGREES	•	7	•	-	•	•		O*m		•	•	•	^ا	Ġ,	0	-	?	ċ	25.	•	-17	41.	0	9		ຜູ້	62.	-62.8	•	0
GEUMETRIC AL FITUDE	SL FEE	989.	313.	569.	598.	. 610	383.	.806	1023	1417.	1816.	2669.	3461.	3885.	5147.	1594.	8029.	8920.	2309.	4148.	4386.	5420.	1122.	4436.	. 1169	9226	4043.	7838.	718.	1760,	3993.
PRESSUR	HILL IBARS	79.	.59	61.	.00	32.	220	C 8 .	679.0	0.59	59.0	38.0	19.C	o-60	8C. U	7.0	18.0	0.00	36.0	04.0	0.00	63.0	0.56	57.0	78.0	0.50	0-69	36.0	24.0	12.0	0.00

RELATIVE HUMIDITY NUT SUPPLIED. ZERO VALUE ASSUMED FCR COMPUTATIONS.

FEE 1 MSL

SIGNIFICANT LEVEL DATA 0459003903 WHITE SANDS SITE

MSIM SITE COORDINATES E 488,580 FEET N 185,045 FEET

TABLE IX (Cont)

REL_HUM. PERCENT	**					
υE	• •	,	•	•0	•0	• 0
TEMPERATURE AIR DEMPOINT DEGREES CENTIGRA	13.0	6.5	Ŷ	S	*	Q
GEOMETRIC ALTITUDE NSL FEET	55337.2	1966.		66815.3	91001-2	01089.3
PRESSURE MILL IBARS	7.48		-	-	0	7

RELATIVE HUMIDITY NOT SUPPLIED. ZERO VALUE ASSUMED FOR COMPUTATIONS.

UPPER AIR DATA 04590U3903 WHITE SANDS SITE

> STATICN ALTITUDE 3989.0 FEET MSL 14 JAN. 69 0630 HRS MST ASCENSION NO. 27

WSTM SITE CUORDINATES E 488,580 FEET N 185,045 FEET

TABLE X

CMETR	PRESSURE	TEM	TEMPERATURE	REL .HUM.	DENSITA	SPEED OF	NIX	4	INDEX
ALILIODE MSL FEET	MILLIBARS	AIR DEGREES	CENTIGRADE	PEKCENI	M/CUBIC METER	SOUND KNOTS	DEGREES(IN)	KNOTS	Ur Refract Ion
3589.0		2-1	-3.0	6	0	4	0		.00027
4000.0	•	2-4		8	109.	4	0		.00027
4500.0	6	13.8		47.7	4		246.3	3.5	3
5000.0	47.		1.6	2	025.	60.	2		.00026
5500.0	•	•	0.2	0	.60	98	3		-00025
	7.	•	-1-3	-	4	9	8.		.00024
6500.0	2	12.0	•	s.	78.	33	3		.00024
7600.0	80	10.9	-3.5	• 9	64.	57	7	u •	.00023
7 500.0		6-7	•	7	51	655.6	3.		.00023
8000.0	9	8.5		6	38-	5,4	-4	-	.00023
8500.0	9	1.3	•	0	25.	652-7	0	8.	.00022
000	2		-5.9	2	12.	651.3	-	-	.00022
9500-0	8	5-3	•	*	8	650.0	2	ë	.00020
10000	705.		-18-4	6	84.	0.649		m	.00020
	692-		-18.4	8	0	648-2		'n	.00020
11000.0	6		-18-4	6		4.149		7.	0
50n.			-7.9	ä				9	0
2000.	654.4		-3.7	9	831.2	6*449		7	.00020
	642-1	9-0-		щ.				7	Ö
13000.0	630.0		6-4-	9.		642.3		-	0
13500.0	618.1			Š		40.		9	Š
14000-0	6.939	-3.7	-9.5	s,	•	639.8	•	ŝ	.00019
500-	594.7			2		•		3	.00018
S	583.3	1.5 ± 5.	٠	6		; -		9	.00018
5 500.	572.1	8-9-	-10.0	\$		636.0		e	.00018
.000	561.0	1-8-	-11.4	5.				3	.00017
500.		•	-12.9	7	•	3	•	‡	.00017
17600.0	539.4	-9-5	-14.4	8		2		4.	.00017
150	6-875	-10-4	5	2.49	700°6	631.5	250.4	•	.00016
18000.0		-	-15.4	7	88.	30.	50.	-	-00016

STATICN ALTITUDE 3589.C FEET MSL 14 JAN. 09 0630 HRS MST ASCENSION NO. 27

UPPER AIR DATA 0459003903 WHITE SANDS SITE

WSTM SITE CUGRDINATES E 488,580 FEET N 185,045 FEET

TABLE X (Cont)

INDEX OF REFRACTION	00016	.00015	-00015	00012	.00014	*0000	.00014	014	13	00013	13	13		.00012	-00012	.00012	7	11000	.00011	11	11000	.00010	10	000010	.00010	000010	50000	60000	500	6000
TA SPEED KNOTS	28-7	Ġ.	6	5	8	ċ	7	,	,	4	20	7	~	1.	7	-	-	-	7	-	-	0	6	0	7	7	4	ä		ċ
WIND CA DIRECTION DEGREES(TN)	250.3	50.	51	53	54	S	55	54	53	52	250-1	48	247.1	S	4	•	S	S	S	9	Ø	0	3	9		9	~4	60.	Q	59.
SUUND KNOTS	629-8	а	7	Š	624.5	3.	-	620.1	8	6.	50	3	615.9	11.	10.		07.	05.	04.	02.	01.	-66	98-	96.	94.	93.	91.	89.	87.	86.
DENSITY S GM/CUBIC METER	~	9	55.	45.	35.	25.					•		559.8		•					•	•	81.	73.	9	• Э	7	43.	9	29.	8
REL.HUM. Percent	1.99	2	2.	4	2.	2.	· V	2	5	m	-	6		6	•	6	8	•	• 9	45.1	4	2.	41.7	•	6	æ	33.7**	(,		• 9
ERATURE DEMPOINT CENTIGRADE	-16-9	•	•					٠			•	·	•	•		-35.9	•		•	•	-42.9	-44.3	•	-47-1		6	-52.3	Š	-58.2	-
TEMP AIR DEGREES	-11.9	~	e •	•	6.	•		6	9	'n	ä	Ş,	-25-5	•	7.	æ	6	7	2	3	4	9	7	8	9.	-41.0	7	-43.8	-45.2	1-95-
PRESSURE MILLIBARS	8	98.	488-4	8	9.	6	50.	41.	32.	23.	15.	.90	398.1	*6A	81.	73.	65.	25.	.64	42.	35.	27.	20.	13.	. 20	.00	93.	87.	80.	14-
GEOMETRIC ALTITUDE MSL FEET	18500. L	9 00	19 500 . 0	9	050	21000-3	21500.0	22000-0	250	7	350	4	24500.0	S	S	266000.0	26 500 0	27000-0	27 500.0	28000-0	28 500.0	7	29500-0	300000	30 500.0	31000.0	31500.0	32000-0	32 500.0	33000.0

AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION. **#**

STATION ALTITUDE 3989.0 FEET MSL **0630 HRS MST** 27 ASCENSION NO. 14 JAN. 69

WHITE SANDS SITE UPPER AIR DATA 0459003903

MSIM SITE COORDINATES E 488,580 FEET N 185,045 FEET

TABLE X (Cont)

1.000093 .000065 .000088 .000086 *00000 +900000--000056 .000089 .000065 .000083 .00000 -00003 -000072 . cuocar -000069 .000068 .000066 .00000 .000000 .00000 .000055 -000054 .00000 .000052 1600000-.00000 -000062 250000-.000051 REFRACTION INDEX 46.6 30.5 33.1 37.3 42.6 6-44 45.8 29.3 49.2 39.7 41-6 42.8 43.8 44.5 45-2 45.3 45.5 46-3 4-1-4 49.2 51.0 51.2 51.3 46.1 SPEED KNOTS WIND DATA DEGREES (IN) DIRECTION 252.4 270.8 218.5 246.9 251.1 265.7 275.0 270-7 270.9 280.6 27.2.2 249.6 279.4 256-7 248.2 247-3 248-2 253.9 256.7 260.5 281.4 277.7 272.3 9.692 769.0 269.3 2.697 SPEEU OF 580.4 578.6 584.1 511.5 577.8 576.4 6.475 579.0 574.6 575.1 577.1 573.2 572.0 570.9 568.7 567.6 576.1 573.4 580.4 2.085 580.0 5.615 575.7 514.2 576.9 578.6 969-8 SOUND KNOTS 401.8 379.9 297.6 273.6 394.3 237.0 232.3 373.0 365.9 344.8 325.0 317.0 310.4 503.9 291.4 279.4 267.9 251.9 387.1 355.2 334.7 285.3 262.3 257.0 246.8 541.8 GM/CUBIC REL. HUM. DENSITY HETER PERCENT * 5.0** -0--0--0--0--0--0-• 0 i -0--0--0--0--0-0--0--0-0-0--0-•0--0-•0--0-01 -0-0-DEGREES CENTIGRADE DEMPOINT -12.5 TEMPERATURE 0 5-64--50.9 -53-1 7-09-6.75--54.6 -54.3 -55-4 -55-0 -52.3 -51.0 -51.3 -51.8 -54.0 -59.0 -48-1 -53.1 -56.3 -50-7 -52.4 -53.5 -55.7 -57.3 -59.8 -55.1 -56.5 -58-2 MILLIBARS PRESSURE 262.2 6.61 171.6 48.6 41.6 227.3 145.1 56.2 50.3 217-2 207-2 56.0 233.1 212-1 88.6 184.2 9-191 59.8 52-3 4045 238.7 222-4 202.4 191.7 93.1 75.7 63.7 GECMETRIC 33500.0 34000.0 34500-0 35000.0 35 500-0 36000.0 36500.0 37000.0 37500.0 38 LOO. 38500.0 39000.0 39500.0 40000-0 40 500.0 41000.0 41500.0 42000.0 42500.0 43000.0 43500.0 0.000++ 44500-0 45000.0 45500.0 46 500 00 47000.0 466000.0 MSL FEET AL TITUDE

AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION. ¥

.0000050

274.9

566.4

227.6

48600.0

TATION ALTRIUDE 3989.0 FEET MSL 14 JAN. 65 25CENSIUN 36. 27

UPPER AIR DATA 0459003903 WHITE SANDS SITE

WSTM SITE CUURDINATES E 488,580 FEET N 165,045 FEET

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3	2
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TUV	1
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INDEX OF REFRACT ION	1.000048	00000	,00000	* 0000	.0000	.00004	.0000	.0000	*00000	.0000		.00000	.0000	.0000	.0000	.0000	E0000	.0000	.0000		.00000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
SPEED KNOTS	44 60 • 0	5	7	ċ	3	÷	9	ะ์	8	;	2.	4	ċ	7	<i>ਹ</i>	4	2	-	4	Ċ.	.;	ų	e.	:	ó	ċ			~
MIND CA DIRECTION DEGREES(TN)	275.9							•		•													•			-	3006	9.662	296-1
SPEED OF SUUND KNUTS	565-3	64.	63.	70	3	35	52	50	ş	3	5,5	Š	3	3	3	3	2	52	3	Ð	2	25	3	S	3	S.	3	ş	3 3
ENSITY S M/CUBIC HETER	217.6	07.	. 50	99.	95.	92.	98•	83	29.	.5	71.	.19	63 c	5. 2.	55.	₹.	48.	44.	41.		34.	31.	27.	24	707	17.	14.	11.	.
25																													
REL.HUN. DE PERCENT GN	**		-0. **	** 0-	** *0-	-0-	** *0-	** *0=	** *0-	** ·0-	** *0-	** •0-	★* •0-	** "0"	** *0-	** .0-	** "0-	++ -0-	** · O	** "0"	** *0-	** "0-	** *0-	** *0-	** *0=	** ,0-	** •01	-0-	** *0-
E REL.HUM. D Int Percent G Rade	00	0	0	0-	0 -	0-	01	0-	0-	0-	01	0-	0-	01	01	0-	0-	0-	•	0	0-	01	01	01	0-	0-	01	0-	1
RATURE REL.HUN. D Dempoint Percent G Entigrade	1 1	62.7 00	00	0-	-1 00	0- 0 F.	0- 0	.0 8.	0- 0 F-	00 8-	0- 0-	.0 0.	.0 8.	0- 0-	0-	0- 0- 9.	0- O 8-	2.1 00.	00 F.	¿-6 00	(4.8 O- 00.	2.9 00	2-4 0 -0 -0	0-	0-	1-2 00	01	0-4-0 4-0	.0
TEMPERATURE REL"HUN" D AIR DEMPOINT PERCENT G GREES CENTIGRADE	62.3	25.3 162.7 0. 10	2.2.3 -63.5 00.	19.3 -64.8 00	-3 -66-1 00	3.5 -67.3 00	.6 -68.2 00	.9 -68.8 0.	0- 0 F-69- 7'	00 8-69- 5-70	0 -70.3 00	.4 -70.6 0.	.0 -70.8 0.	-011-1 00	-2 -71.3 00	.9 -11.6 0.	.7 -71.8 U0	.5 -72.1 00	.4 -72.3 00	.3 ~72.6 00.	٠٤ - ١٤٠٤ - ١٥٠	-72.9 00	3.5 -72.4 00	.6 -72.0 0.	9.8 -71.6 00	-71-2 00	0- 8-01- 8-01-	00 5.02- 7.	3.0 -69.9 0.

** AT LEAST UNE ASSUMED RELATIVE HIMIDITY VALUE MAS USED IN THE INTERPOLATION.

STATION ALTITUDE 3989.0 FEET MSL 14 JAN. 69 0630 HRS MST ASCENSION NO. 27

UPPER AIR DATA 0459003903 WHITE SANDS SITE

MSIM SITE COORDINATES E 488,500 FEET N 185,045 FEET

TABLE X (Cont)

		ø,	33	~	ત્ય	~	9	0	.	Ω.	3 1	മ	~	~	~	~		:0		ž o		.+		~	~	~:	~	~	~'		_
INDEX	REFRACTION	.0000	.00002	70000	.0000	20000	00000	20000.	.0000	100000	.0000	-00000	.0000	100000	40000	100000	.0000	.0000	.0000	.0000	- 000 C1	.0000	.0000	* 40000	.0000	.00001	.0000	.0000	.0000	.0000	*0000
TA SPEE	KNOTS	3				•	24.1									•	•						3						•		
ď	S	•			•		297.7					•													•	•		•		•	
SPEED OF	KNOTS	55 53	56.	56.	57.	57.	557.5	57.	57.	57.	57.	57.	58.	33	59.	ž.	50.	50.	61.	. 19	61.	52.	62.	53.	53.	64.	64.	65.	55.	56.	26.
DENSITY	HETER	69.	*	ċ	9		82.0		î Pe	٠ د	• 60	-	Ġ	\$			-	ċ		ង	• 60	٠ ک	•	•	7	5	٠	*	:		*
Y I		*	*	* *	*	*	*	* 5	*	*	*	* *	*	*	¥	*	*	*	*	*	*	*	*	*	*	*	¥	7	¥	*	+
REL HU				0-			0			0-			0			0			0			0		0	0	0	-0-	0-	0	.0.	0
TEMPERATURE DEMPOINT	₹ .	_	• •	-	•	-	• •	0	0.	.	; :>	" 0	•0	•	.	. 0	• 0	.	•	• •	•	•	• •	• ၁	•	• •	•	•		0	•0
TEMP AIR		5-69-	-69-1		8	3		*	8	3		8		7.	-	1-99-	ě	•				+	4	9	•	-63-1	-62.1	¥.	?	1.19-	•
PRESSURE	MILLIBARS	61.5	6	8	9	Š	54.1	7	-	ċ	#		9		÷	ä	~	-	0	6	8	7	•	ŝ	3	ä	3	,	-		á
GEOMETRIC ALTITUDE	L FEE	63500-0	4000-	64500.0	S	500-		0 - 005 99	0.00029		0.00089	0.00589	0.00069		0.00007		10007	1 500"	2000-	72500.0	3000.	3500-	4000	4500.	200	5500.	6000-	6 500.	200	500.	78000.0

AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE MAS USED IN THE INTERPOLATION. *

TATIC ALTITUDE 3989.0 FEET MSL 14 JAN. 69 C650 HRS MST ACCENSION NU. 21

UPPER AIR DATA 0459003903 WHITE SANDS SITE

MSTM SITE CUURDINATES E 488,580 FEET N 185,045 FEET

TABLE X (Cont)

. 000000 -0000COB P00000. -000000 .000000 -000000 .000000 .000006 - 00 CC 11 .00000 .00000 010000 6000000 4000000 4000000 .000cca **800000 .000000** .00000 1000000 1000000 .000000 .00000 ***0000CC** .00000 .000000 .000000 REFRACTION INDEX 45.6 27.9 34.9 35.4 36.9 99.8 29.3 30.0 31.8 33.0 34.0 34.0 35.3 35.9 36.2 38.0 40.5 41.0 41.4 45.8 35.7 34.7 34.7 35.7 39.1 1-14 42.0 4.2 34. L SPEEU KNOTS MINU CATA DEGREESITAL UIRECTION 273.1 273.0 273.0 273.0 273.0 272.0 273.4 271.5 463.6 270.5 9.797 269.5 272.3 272.8 273.9 273.8 268.1 462.6 9-79 263.7 4.497 4000 213.1 213.1 272.8 272.7 0.697 203-1 SPEED OF 515.6 511.5 572.4 575.2 568.7 569.6 510.5 571.9 512.8 513.3 573.8 574.7 575.0 1.616 575.3 515.4 575.5 515.6 0.916 576.4 1.910 571.0 574.2 575.2 501.7 568.2 1-600 1.014 CNUCS KNUTS 38.8 30.9 43.0 6715 39.8 37.9 42.4 6.00 46.9 36.0 34.2 33.3 32.5 4.67 27.4 26.8 25.5 6 - 47 24-3 35. L 31.7 30.2 23.7 7.44 28.7 28-1 23.1 26. l CM/CUBIC DENSITY AL TER REL. HUR. PERCENT 0--0--0--0--0--0--0--0--0--0--0--0-.0--0--0--0--0--0--0-9--0--0-.01 -0-0 DEGREES CENTIGHADE DEMPOINT I EMPEKATUKE 3 ; 000 5 4-15--56.4 1-55-7-65--58.5 -55.0 6-45--54.8 8.45-3-45--60.0 6.65--59.5 -58.8 -57.8 -56.0 1-55--55.3 -55.0 1-54-7 1-54.7 9.45--54.3 -53.8 -60.2 -58.1 -57.1 -56.7 MILLIBARS PRESSURE 43.4 12.B 9.51 26-4 74.0 6.77 41.8 41.3 8.0× £0.3 8.51 6.61 6-81 4 - R 1 0.8 7.6 7-11 8.9 4-9 0.9 0-17 25.7 25-1 44.5 CHUMFIRIC D-007+8 82500.0 83500.0 84500.0 85000.0 0.00448 86000. 8 7 500° C 0.000061 80000.0 30,500.0 41000° 81500-0 83000.0 80 500.0 9100c.0 88000.0 84500.0 89000-0 89500.0 3050C 0.00016 51500.J 92000.0 0.500.0 34500.0 42000-0 0.00004 MSL FEET AL . I TUBE

AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION. *****

	MSTM SITE COORDINATES	E 488,580 FEET	N 1854045 FEET
	•		
UPPER AIR DATA	0459003903	WHITE SANDS SITE	
	LITUDE	14 JAN. 69 0630 HRS MST	ASCENSION NO. 27

								_	_	_	_	_		_	_	_	_	
	INDEX	REFRACT 10N	1.000005	1.000005	1.000005	1.000005	1.000005	1.000004	1.000004	1.000004	1.000004	1.000004	1.000004	1.000004	1.000004	1-000004	1.000000	1.000003
	TA SPEED	KNOTS	47.3	48-7	•	51.5	70	54.6	Ç	Q	55.8	55.4						
	MIND DATA	DEGREES(TN)	268.3	267.8	267.2	266.7	268.0	269-4	270.7	271.9	273.0	274.2						
nt)	SPEED OF SOUND	KNOTS	577.5	577.8	578.2	578.6	578.9	579.3	579.6	580.0	580.4	580.7	581.1	581.5	581.8	582.2		582.9
TABLE X (Cont)	DENSITY S	METER	22.6	22.0	21.5	21.0	0	20.0	6	19.0	8	18.1	17.6	17.2	16.8	16.4	16.0	15.6
	REL-HUM. PERCENT		*	##	#	*	*	*	*	*	*	*	*	*	*	*	*	*
	L-H	1	_		_			_	٠		٠	۰		٠				•
	8 9		0	0	0	0	0-	0	Ö	0	0	0	9	0	0	0	-0-	0
	-	ш				0.												
		ES CENTIGRADE		.0 6.		.4			0	1.3 0.	•	-0 L		٠٥.	•0		•	
	EMPERATURE Dempoint	CENTIGRADE	53.2 0.	52.9 0.	.6 -52.7 0.	. 3 - 52.4 0.	.0 -52.1 0.	51.8 0.	.4 -51.5	•1 -51.3 O.	51.0	.5 -50.7 0.	3 -50.4 0.	0 -50.2	49.9	-0 9-6	-49.3	49.0

AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION.

MANDAIORY LEVELS 0455003903 WHITE SANDS SITE

WSTM SITE COURDINATES E 488,580 FEET N 185,045 FEET

TABLE XI

PRESSURE GI	GEUPOTENT IAL	TAIR	EMPERATURE De WPOINT	REL.HUM. PERCENT	MIND DIRECTION	DATA Speed
BARS	FEET	DEGREES	~		DEGREES	KNOTS
	55	4.		43.	5 Å.	•
	53	•	-3.1	35.	44	-
•	8354.	7.6	-5.1	40.	29.	~
	20	•		18.	33.	*
	217				227.1	27.3
	14260-	•	-9-1	-69	31.	
	643	•	2.	72.	-64	
2	890	-12.5	8	62.	50.	•
	21511.	∞	-24.2	62.	54.	-
	425	เม	8	73.	. 2 %	-d
	349	(1	-40-1	46.	ţ,	7
•	550	-41.1	-50.0	38.	60.	÷
	496	-52.1	•	***0-	48.	
	195	7	•	***0-	73.	e M
	250	4	•	***0-	11.	5
	571	w	• •	***0-	•69	6
	943	-62.7	0	***0-	73.	•
	384	0	0	***01	62.	2
	817	1	0	***0-	77.	~
	C74	-31.3	0	***0-	95.	2
	63751-	-69-1	•	***0-	91.	-4
•	733	-68-4	•	***0-	93,	.
•	27.5	-65.6	•	***0-	60.	*
	755	-	•	***0-	77.	'n
	81287.	œ,	•0	***0-	63.	•
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AT LEAST ONE ASSUMED RELATIVE HUMIDITY VALUE WAS USED IN THE INTERPOLATION. *

RELEASE TIME	E TIME	SEC	SECOND-STAGE	, ,	CMPACT DISPLACEMENT IN MILES	EMENT IN	MILES D	DUE TO WIND	QN:	AZI-	THEORE	THEORETICAL IMPACT PROM TAINCHER	TPACT
(TOE)		SFC-2	SFC-216 FT	216-4.	216-4160 FT	4160-7:	4160-73300 FT	TOTAL	AL.	KOTH COFG-	E	(IN MILES)	1
RAWIN- SONDE	PIBAL	S-N	M-3	N-S	E-W	N~S	E-W	N-S	E-W	REES)	RANGE	N-S	KK
0330	0430	2.0N	0.4W	3.7N	1.4W	3.28	17.9W	2.5N	19.74	356.5	73.0	72.9N	4.4W
0330	0200	4.8N	0.5E	3.3N	2.7W	3.28	17.9W	4.9N	20.1W	356.4	75.5	75.3N	4.8W
0330	0530	4.6N	0.7E	2.2N	4.0W	3.28	17.9W	3.6N	21.2W	355.4	74.2	74.0N	5.9W
0330	0545	2.0N	0.8E	3.9N	3.3W	3.28	17.9W	2.7N	20.4W	356.0	73.3	73.1N	5.17
0330	0090	1.0N	2.7E	0.4N	3.3W	3.28	17.9W	1.85	18.5W	357.3	68.7	68.6N	3.2W
0330	0610	1.3N	1.3E	3.6N	4.4W	3.28	17.9W	1.7N	21.0W	355.5	72.3	72.1N	5.7W
0330	0624	1.3N	1.6E	0.3N	4,0W	3.28	17.9W	1.68	20.3W	355.8	0.69	68.8N	S.0W
0630	0630	2.0N	1.5E	1.4N	2.1W	0.7N	16.2W	4.1N	16.8W	358.8	74.5	74.5N	1.5W

	AZI- MUTH	MILES	MILES FROM LAUNCHER	UNCHER
	(DEG- REES)	RANGE	N-S	E-W
LAUNCHER SETTING (ELEVATION 85.0 DEGREES QE)	016.0 73.2	73.2	70.4N	20.2E
NO WIND IMPACT	012.3	012.3 72.0	70.4N	15.3E
PREDICTED SECOND-STAGE IMPACT	358.0	0.69	NO.69	2.4W
SECOND-STAGE IMPACT, RADAR TRACK	355.6	355.6 90.8	90.5N	7.0W
PREDICTED BOOSTER IMPACT	022.0	2,1	1.9N	0.8E
ACTUAL BOOSTER IMPACT	N/A	N/A	N/A	N/A

TABLE XII. IMPACT PREDICTION DATA NIKE-HYDAC STV 75, SR-06

Security Classification			
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13 ABSTRACT	Wille 38	nus missi	e Range, New Mexico
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